

SEQUENCE LISTING

<110> Bukh, Jens
Purcell, Robert
Yanagi, Masayuki
Emerson, Suzanne

<120> Infectious cDNA Clone of GB virus B and
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<130> NIH257.001NP

<140> US 10/009,002

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<150> PCT/US00/15293

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 1 5 10 15
 Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
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 Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
 35 40 45
 Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
 50 55 60
 Ile Pro Lys Asp Arg Arg Ser Thr Gly Lys Ser Trp Gly Lys Pro Gly
 65 70 75 80
 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Leu Gly Trp Ala Gly Trp
 85 90 95
 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Asn Asp Pro
 100 105 110
 Arg His Arg Ser Arg Asn Val Gly Lys Val Ile Asp Thr Leu Thr Cys
 115 120 125
 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Val Val Gly Ala Pro Leu
 130 135 140
 Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
 145 150 155 160
 Gly Val Asn Phe Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
 165 170 175
 Phe Leu Leu Ala Leu Leu Ser Cys Ile Thr Thr Pro Val Ser Ala Ala
 180 185 190
 Glu Val Lys Asn Ile Ser Thr Gly Tyr Met Val Thr Asn Asp Cys Thr
 195 200 205
 Asn Asp Ser Ile Thr Trp Gln Leu Gln Ala Ala Val Leu His Val Pro
 210 215 220
 Gly Cys Val Pro Cys Glu Lys Val Gly Asn Ala Ser Gln Cys Trp Ile
 225 230 235 240
 Pro Val Ser Pro Asn Val Ala Val Gln Arg Pro Gly Ala Leu Thr Gln
 245 250 255
 Gly Leu Arg Thr His Ile Asp Met Val Val Met Ser Ala Thr Leu Cys
 260 265 270
 Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Val Met Leu Ala Ala
 275 280 285
 Gln Met Phe Ile Val Ser Pro Gln His His Trp Phe Val Gln Asp Cys

290	295	300
Asn Cys Ser Ile Tyr	Pro Gly Thr Ile Thr	Gly His Arg Met Ala Trp
305	310	315
Asp Met Met Met Asn Trp	Ser Pro Thr Ala Thr	Met Ile Leu Ala Tyr
325	330	335
Ala Met Arg Val Pro Glu Val Ile Ile	Asp Ile Ile Ser Gly Ala His	
340	345	350
Trp Gly Val Met Phe Gly Leu Ala Tyr Phe	Ser Met Gln Gly Ala Trp	
355	360	365
Ala Lys Val Val Val Ile Leu Leu Leu Ala Ala	Gly Val Asp Ala Arg	
370	375	380
Thr His Thr Val Gly Gly Ser Ala Ala Gln Thr Thr	Gly Arg Leu Thr	
385	390	395
Ser Leu Phe Asp Met Gly Pro Arg Gln Lys Ile Gln Leu Val Asn Thr		
405	410	415
Asn Gly Ser Trp His Ile Asn Arg Thr Ala Leu Asn Cys Asn Asp Ser		
420	425	430
Leu His Thr Gly Phe Ile Ala Ser Leu Phe Tyr Thr His Ser Phe Asn		
435	440	445
Ser Ser Gly Cys Pro Glu Arg Met Ser Ala Cys Arg Ser Ile Glu Ala		
450	455	460
Phe Arg Val Gly Trp Gly Ala Leu Gln Tyr Glu Asp Asn Val Thr Asn		
465	470	475
Pro Glu Asp Met Arg Pro Tyr Cys Trp His Tyr Pro Pro Arg Gln Cys		
485	490	495
Gly Val Val Ser Ala Lys Thr Val Cys Gly Pro Val Tyr Cys Phe Thr		
500	505	510
Pro Ser Pro Val Val Val Gly Thr Thr Asp Arg Leu Gly Ala Pro Thr		
515	520	525
Tyr Thr Trp Gly Glu Asn Glu Thr Asp Val Phe Leu Leu Asn Ser Thr		
530	535	540
Arg Pro Pro Leu Gly Ser Trp Phe Gly Cys Thr Trp Met Asn Ser Ser		
545	550	555
Gly Tyr Thr Lys Thr Cys Gly Ala Pro Pro Cys Arg Thr Arg Ala Asp		
565	570	575
Phe Asn Ala Ser Thr Asp Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys		
580	585	590
His Pro Asp Thr Thr Tyr Leu Lys Cys Gly Ser Gly Pro Trp Leu Thr		
595	600	605
Pro Arg Cys Leu Ile Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys		
610	615	620
Thr Val Asn Tyr Thr Ile Phe Lys Ile Arg Met Tyr Val Gly Gly Val		
625	630	635
Glu His Arg Leu Thr Ala Ala Cys Asn Phe Thr Arg Gly Asp Arg Cys		
645	650	655
Asn Leu Glu Asp Arg Asp Arg Ser Gln Leu Ser Pro Leu Leu His Ser		
660	665	670
Thr Thr Glu Trp Ala Ile Leu Pro Cys Ser Tyr Ser Asp Leu Pro Ala		
675	680	685
Leu Ser Thr Gly Leu Leu His Leu His Gln Asn Ile Val Asp Val Gln		
690	695	700
Phe Met Tyr Gly Leu Ser Pro Ala Leu Thr Lys Tyr Ile Val Arg Trp		
705	710	715
Glu Trp Val Ile Leu Leu Phe Leu Leu Leu Ala Asp Ala Arg Val Cys		
725	730	735

1170	1175	1180
Arg Ala Ala Val Cys Ser Arg Gly Val Ala Lys Ser Ile Asp Phe Ile		
1185	1190	1195
Pro Val Glu Thr Leu Asp Ile Val Thr Arg Ser Pro Thr Phe Ser Asp		1200
	1205	1210
Asn Ser Thr Pro Pro Ala Val Pro Gln Thr Tyr Gln Val Gly Tyr Leu		1215
	1220	1225
His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro Val Ala Tyr		1230
	1235	1240
Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala		1245
	1250	1255
Thr Leu Gly Phe Gly Ala Tyr Leu Ser Lys Ala His Gly Ile Asn Pro		1260
1265	1270	1275
Asn Ile Arg Thr Gly Val Arg Thr Val Thr Thr Gly Ala Pro Ile Thr		1280
	1285	1290
Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys Ala Gly Gly		1295
	1300	1305
Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ala Val Asp Ser Thr		1310
	1315	1320
Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly		1325
	1330	1335
Val Arg Leu Thr Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr		1340
1345	1350	1355
Thr Pro His Pro Asn Ile Glu Glu Val Ala Leu Gly Gln Glu Gly Glu		1360
	1365	1370
Ile Pro Phe Tyr Gly Arg Ala Ile Pro Leu Ser Tyr Ile Lys Gly Gly		1375
	1380	1385
Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala		1390
	1395	1400
Ala Ala Leu Arg Gly Met Gly Leu Asn Ser Val Ala Tyr Tyr Arg Gly		1405
	1410	1415
Leu Asp Val Ser Val Ile Pro Thr Gln Gly Asp Val Val Val Val Ala		1420
1425	1430	1435
Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile		1440
	1445	1450
Asp Cys Asn Val Ala Val Thr Gln Val Val Asp Phe Ser Leu Asp Pro		1455
	1460	1465
Thr Phe Thr Ile Thr Thr Gln Ile Val Pro Gln Asp Ala Val Ser Arg		1470
	1475	1480
Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Leu Gly Ile Tyr Arg		1485
	1490	1495
Tyr Val Ser Thr Gly Glu Arg Ala Ser Gly Met Phe Asp Ser Val Val		1500
1505	1510	1515
Leu Cys Glu Cys Tyr Asp Ala Gly Ala Ala Trp Tyr Glu Leu Thr Pro		1520
	1525	1530
Ser Glu Thr Thr Val Arg Leu Arg Ala Tyr Phe Asn Thr Pro Gly Leu		1535
	1540	1545
Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Ala Val Phe Thr Gly		1550
	1555	1560
Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly		1565
	1570	1575
Glu Asn Phe Ala Tyr Leu Thr Ala Tyr Gln Ala Thr Val Cys Ala Arg		1580
1585	1590	1595
Ala Lys Ala Pro Pro Pro Ser Trp Asp Val Met Trp Lys Cys Leu Thr		1600
	1605	1610
		1615

Arg	Leu	Lys	Pro	Thr	Leu	Val	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu		
			1620					1625					1630				
Gly	Ser	Val	Thr	Asn	Glu	Val	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr		
		1635					1640					1645					
Ile	Ala	Thr	Cys	Met	Gln	Ala	Asp	Leu	Glu	Val	Met	Thr	Ser	Thr	Trp		
	1650					1655					1660						
Val	Leu	Ala	Gly	Gly	Val	Leu	Ala	Ala	Val	Ala	Ala	Tyr	Cys	Leu	Ala		
1665					1670				1675						1680		
Thr	Gly	Cys	Val	Cys	Ile	Ile	Gly	Arg	Leu	His	Ile	Asn	Gln	Arg	Ala		
			1685					1690						1695			
Val	Val	Ala	Pro	Asp	Lys	Glu	Val	Leu	Tyr	Glu	Ala	Phe	Asp	Glu	Met		
		1700						1705					1710				
Glu	Glu	Cys	Ala	Ser	Arg	Ala	Ala	Leu	Ile	Glu	Glu	Gly	Gln	Arg	Ile		
	1715					1720						1725					
Ala	Glu	Met	Leu	Lys	Ser	Lys	Ile	Gln	Gly	Leu	Leu	Gln	Gln	Ala	Ser		
	1730					1735					1740						
Lys	Gln	Ala	Gln	Asp	Ile	Gln	Pro	Thr	Val	Gln	Ala	Ser	Trp	Pro	Lys		
1745				1750						1755					1760		
Val	Glu	Gln	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile		
			1765					1770						1775			
Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	Pro	Ala	Val	Ala		
		1780						1785					1790				
Ser	Met	Met	Ala	Phe	Ser	Ala	Ala	Leu	Thr	Ser	Pro	Leu	Ser	Thr	Ser		
	1795						1800					1805					
Thr	Thr	Ile	Leu	Leu	Asn	Ile	Leu	Gly	Gly	Trp	Leu	Ala	Ser	Gln	Ile		
	1810				1815						1820						
Ala	Pro	Pro	Ala	Gly	Ala	Thr	Gly	Phe	Val	Val	Ser	Gly	Leu	Val	Gly		
1825				1830					1835						1840		
Ala	Ala	Val	Gly	Ser	Ile	Gly	Leu	Gly	Lys	Val	Leu	Val	Asp	Ile	Leu		
			1845					1850						1855			
Ala	Gly	Tyr	Gly	Ala	Gly	Ile	Ser	Gly	Ala	Leu	Val	Ala	Phe	Lys	Ile		
		1860						1865					1870				
Met	Ser	Gly	Glu	Lys	Pro	Ser	Met	Glu	Asp	Val	Val	Asn	Leu	Leu	Pro		
	1875						1880					1885					
Gly	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	Ile	Cys	Ala	Ala		
	1890				1895						1900						
Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala	Val	Gln	Trp	Met		
1905				1910					1915						1920		
Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His	Val	Ala	Pro	Thr		
			1925					1930						1935			
His	Tyr	Val	Thr	Glu	Ser	Asp	Ala	Ser	Gln	Arg	Val	Thr	Gln	Leu	Leu		
		1940						1945					1950				
Gly	Ser	Leu	Thr	Ile	Thr	Ser	Leu	Leu	Arg	Arg	Leu	His	Asn	Trp	Ile		
	1955						1960					1965					
Thr	Glu	Asp	Cys	Pro	Ile	Pro	Cys	Gly	Gly	Ser	Trp	Leu	Arg	Asp	Val		
	1970					1975					1980						
Trp	Asp	Trp	Val	Cys	Thr	Ile	Leu	Thr	Asp	Phe	Lys	Asn	Trp	Leu	Thr		
1985				1990					1995						2000		
Ser	Lys	Leu	Phe	Pro	Lys	Met	Pro	Gly	Leu	Pro	Phe	Val	Ser	Cys	Gln		
			2005					2010						2015			
Lys	Gly	Tyr	Lys	Gly	Val	Trp	Ala	Gly	Thr	Gly	Ile	Met	Thr	Thr	Arg		
		2020						2025					2030				
Cys	Pro	Cys	Gly	Ala	Asn	Ile	Ser	Gly	Asn	Val	Arg	Leu	Gly	Ser	Met		
	2035						2040					2045					
Arg	Ile	Thr	Gly	Pro	Lys	Thr	Cys	Met	Asn	Ile	Trp	Gln	Gly	Thr	Phe		

2050	2055	2060			
Pro Ile Asn Cys Tyr Thr Glu Gly Gln Cys Val Pro Lys Pro Ala Pro					
2065	2070	2075			2080
Asn Phe Lys Val Ala Ile Trp Arg Val Ala Ala Ser Glu Tyr Ala Glu					
	2085	2090			2095
Val Thr Gln His Gly Ser Tyr His Tyr Ile Thr Gly Leu Thr Thr Asp					
	2100	2105			2110
Asn Leu Lys Val Pro Cys Gln Leu Pro Ser Pro Glu Phe Phe Ser Trp					
	2115	2120			2125
Val Asp Gly Val Gln Ile His Arg Phe Ala Pro Thr Pro Lys Pro Phe					
	2130	2135			2140
Phe Arg Asp Glu Val Ser Phe Cys Val Gly Leu Asn Ser Phe Val Val					
2145	2150	2155			2160
Gly Ser Gln Leu Pro Cys Asp Pro Glu Pro Asp Thr Asp Val Leu Met					
	2165	2170			2175
Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr Ala Ala Arg					
	2180	2185			2190
Arg Leu Ala Arg Gly Ser Pro Pro Ser Glu Ala Ser Ser Ser Ala Ser					
	2195	2200			2205
Gln Leu Ser Ala Pro Ser Leu Arg Ala Thr Cys Thr Thr His Gly Lys					
	2210	2215			2220
Ala Tyr Asp Val Asp Met Val Asp Ala Asn Leu Phe Met Gly Gly Asp					
2225	2230	2235			2240
Val Thr Arg Ile Glu Ser Gly Ser Lys Val Val Val Leu Asp Ser Leu					
	2245	2250			2255
Asp Pro Met Val Glu Glu Arg Ser Asp Leu Glu Pro Ser Ile Pro Ser					
	2260	2265			2270
Glu Tyr Met Leu Pro Lys Lys Arg Phe Pro Pro Ala Leu Pro Ala Trp					
	2275	2280			2285
Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Ser Trp Lys Arg Pro					
	2290	2295			2300
Asp Tyr Gln Pro Ala Thr Val Ala Gly Cys Ala Leu Pro Pro Pro Arg					
2305	2310	2315			2320
Lys Thr Pro Thr Pro Pro Pro Arg Arg Arg Arg Thr Val Gly Leu Ser					
	2325	2330			2335
Glu Asp Ser Ile Gly Asp Ala Leu Gln Gln Leu Ala Ile Lys Ser Phe					
	2340	2345			2350
Gly Gln Pro Pro Pro Ser Gly Asp Ser Gly Leu Ser Thr Gly Ala Gly					
	2355	2360			2365
Ala Ala Asp Ser Gly Ser Gln Thr Pro Pro Asp Glu Leu Ala Leu Ser					
	2370	2375			2380
Glu Thr Gly Ser Ile Ser Ser Met Pro Pro Leu Glu Gly Glu Leu Gly					
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Asp Pro Asp Leu Glu Pro Glu Gln Val Glu Pro Gln Pro Pro Pro Gln					
	2405	2410			2415
Gly Gly Val Ala Ala Pro Gly Ser Asp Ser Gly Ser Trp Ser Thr Cys					
	2420	2425			2430
Ser Glu Glu Asp Asp Ser Val Val Cys Cys Ser Met Ser Tyr Ser Trp					
	2435	2440			2445
Thr Gly Ala Leu Ile Thr Pro Cys Ser Pro Glu Glu Glu Lys Leu Pro					
	2450	2455			2460
Ile Asn Pro Leu Ser Asn Ser Leu Leu Arg Tyr His Asn Lys Val Tyr					
2465	2470	2475			2480
Cys Thr Thr Thr Lys Ser Ala Ser Leu Arg Ala Lys Lys Val Thr Phe					
	2485	2490			2495

2930		2935		2940
Arg Ala Arg Ala Val	Arg Ala Ser Leu Ile	Ser Arg Gly Gly Arg Ala		
2945	2950	2955	2960	
Ala Val Cys Gly Arg Tyr Leu Phe Asn Trp	Ala Val Lys Thr Lys Leu			
	2965	2970	2975	
Lys Leu Thr Pro Leu Pro Glu Ala Arg Leu Leu Asp Leu Ser Ser Trp				
	2980	2985	2990	
Phe Thr Val Gly Ala Gly Gly Gly Asp Ile Tyr His Ser Val Ser Arg				
	2995	3000	3005	
Ala Arg Pro Arg Leu Leu Leu Phe Gly Leu Leu Leu Leu Phe Val Gly				
	3010	3015	3020	
Val Gly Leu Phe Leu Leu Pro Ala Arg				
3025	3030			